

CLAIMS

- 5 1. A method of checking for restrictions in a string of tubing comprising a plurality of tubing sections, the method comprising:

 providing a profile in the tubing string;

- providing a drift member adapted to engage with said
10 profile;

 passing the drift member through the tubing string; and

 determining whether the drift member has engaged with
said profile prior to separating the tubing sections.

- 15 2. The method of claim 1, wherein the tubing is located in a hole or bore.

3. The method of claim 1 or 2, wherein the profile is located towards a distal end of the tubing.

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4. The method of any of the preceding claims, further comprising running a ball, dart or plug through the tubing.

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5. The method of any of the preceding claims, further comprising retrieving the drift member prior to separating the tubing sections.

5 6. The method of any of the preceding claims, further comprising clearing a restriction from the tubing.

10 7. The method of any of the preceding claims, further comprising separating the tubing sections to locate a restriction therein.

8. The method of any of the preceding claims, further comprising:

15 identifying the diameter of a ball, dart, plug or other device to be passed through the tubing; and

selecting a drift member of similar diameter to be passed through the tubing string.

20 9. The method of claim 8, comprising selecting a drift member that defines a diameter slightly larger than the device.

10. The method of any of the preceding claims, further comprising pumping the drift member through the tubing.

11. The method of any of the preceding claims, further comprising circulating fluid through the tubing containing the drift member.
- 5 12. The method of any of the preceding claims, further comprising permitting fluid to drain from the tubing through or around the drift member.
- 10 13. The method of any of the preceding claims, wherein engagement of the drift member with the profile significantly restricts fluid flow through the tubing.
- 15 14. The method of any of the preceding claims, further comprising reconfiguring the drift member to facilitate fluid flow through the tubing.
- 20 15. The method of any of the preceding claims, further comprising determining the location of a restriction in the tubing engaged by the drift member by identifying a volume of fluid pumped into the tubing behind the drift member.
- 25 16. The method of any of the preceding claims, comprising passing a first drift member adapted to permit fluid flow therethrough through the tubing and, if no restriction is encountered by the drift member, retrieving the tubing.

17. The method of any of the preceding claims, comprising passing a first drift member adapted to permit fluid flow therethrough through the tubing and, if the presence of a restriction is identified, passing a second drift member adapted to prevent or significantly restrict fluid flow through the tubing to engage the first drift member, and then identifying the location of the restriction by reference to the volume of fluid pumped into the tubing behind the second drift member.

18. The method of claim 17, wherein the second drift member is passed through the tubing at a slower rate than the first drift member.

19. The method of any of the preceding claims, wherein engagement of the drift member with the profile restricts fluid flow through the tubing, and remotely detecting such restriction.

20. The method of claim 19, wherein fluid is pumped through the tubing and engagement of the member with the profile is identified by a rise in pump pressure.

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21. The method of claim 20, wherein pump pressure is monitored on a 5000psi scale pressure gauge.

22. The method of any of the preceding claims, comprising providing the tubing profile integrally with a portion of the tubing.

23. The method of any of claims 1 to 21, comprising providing the tubing profile in the form of a member adapted to be located within a section of tubing.

24. The method of claim 23, wherein the tubing profile is located at a connection between tubing sections.

25. A method of checking for restrictions in a length of tubing, the method comprising:

passing a drift member through the tubing from a proximal end of the tubing; and

identifying the location of the drift member in the tubing.

26. The method of claim 25, wherein the location of the drift member is identified from said proximal end of the tubing.

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27. The method of claim 25, wherein the tubing is sectional tubing and the tubing sections are subsequently separated, the drift member providing an operator detectable indication on separation of the tubing section containing the drift member.

28. The method of claims 27, wherein the drift member produces an audible signal on separation of the tubing section containing the drift member.

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29. Apparatus for identifying the presence of a bore restriction in a tubing string, the apparatus comprising a drift member adapted to pass through tubing and to engage a profile in the tubing bore, the engagement of the drift member with the profile being operator detectable.

30. The apparatus of claim 29, wherein the drift member is adapted to be pumped through the tubing.

31. The apparatus of claim 29 or 30, wherein the drift member has fins.

32. The apparatus of claim 31, wherein the drift member has flexible fins.

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33. The apparatus of any of claims 29 to 32, wherein the drift member is adapted to permit fluid flow therethrough.

5 34. The apparatus of any of claims 29 to 33, wherein the drift member is in the form of a sleeve.

35. The apparatus of any of claims 29 to 34, wherein the drift member is configurable to prevent or significantly restrict fluid flow therethrough.

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36. The apparatus of any of claims 29 to 35, wherein the drift member includes a burst disc.

15 37. The apparatus of any of claims 29 to 36, wherein the drift member is adapted such that engagement of the drift member with the profile restricts fluid flow through the tubing, which restriction is remotely detectable.

20 38. The apparatus of any of claims 29 to 37, wherein the drift member comprises a flow restriction adapted to create a fluid pressure differential in fluid passing therethrough.

39. The apparatus of claim 38, wherein the flow restriction comprises an erosion-resistant material.

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40. The apparatus of any of claims 29 to 39, wherein the drift member is adapted to be retrievable from the tubing.

5 41. The apparatus of claim 40, wherein the drift member comprises a fishing profile.

10 42. The apparatus of any of claims 29 to 41, further comprising a tubing profile.

43. The apparatus of claim 42, wherein the tubing profile is formed integrally with a portion of tubing.

15 44. The apparatus of claim 42, wherein the tubing profile is defined by a member adapted to be located within a section of tubing.

45. The apparatus of claim 44, further comprising a section of tubing adapted to receive the tubing profile member.

20 46. The apparatus of claim 44 or 45, wherein the profile member includes a profile or the like adapted to engage a tool or device to facilitate removal of the profile member from the tubing.

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47. The apparatus of any of claims 42 to 46, wherein the profile member is adapted to form a seal with the tubing.

5 48. The apparatus of any of claims 29 to 47, wherein the drift member defines a profile adapted to engage with a tubing profile.

10 49. The apparatus of claim 48, wherein the drift member comprises a body and the drift profile is removably mounted thereon.

15 50. The apparatus of any of claims 29 to 49, wherein the drift member is adapted to form a seal with a tubing profile, such that any fluid flowing through the tubing when the drift member is engaged in the profile must flow through the drift member.

20 51. The apparatus of any of claims 29 to 50, wherein the drift member defines one or more flow ports.

52. The apparatus of claim 51, wherein the one or more flow ports are spaced from the leading end of the member.

25 53. The apparatus of claim 51 or 52, wherein the drift member comprises a sleeve and the one or more ports are provided in

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the sleeve wall, whereby if the leading end of the sleeve encounters and engages a restriction fluid may flow through the annulus between the trailing end of the sleeve and the tubing, through the flow ports and into the interior of the sleeve, and then through the leading end of the sleeve.

54. The apparatus of any of claims 29 to 53, wherein the drift member comprises a sleeve having an external profile and defining an internal flow restriction.

55. The apparatus of claim 54, when dependent on claim 53, wherein the flow ports are located in the sleeve wall forwardly of the internal flow restriction and the external profile.

56. Apparatus for identifying the presence of a bore restriction in a tubing string, the apparatus comprising a drift member adapted to pass through tubing and to engage a restriction in the tubing bore, the drift member being adapted to be operator detectable as the tubing is retrieved.

57. The apparatus of claim 56, further comprising a substantially stiff tail coupled to the drift member.

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58. The apparatus of claim 57, wherein the tail comprises connected sections of rod or pipe.

5 59. The apparatus of claim 57 or 58, wherein the tail is of smaller diameter than the drift member.

60. The apparatus of claim 57, 58 or 59, wherein the drift member is coupled to a trailing end of the tail.

10 61. The apparatus of any of claims 57 to 60, wherein a centralising member is provided on the tail.

62. The apparatus of claim 61, wherein the centralising member is provided on a leading end of the tail.

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63. The apparatus of claim 61 or 62, wherein the centralising member is adapted to permit passage of fluid when the member is located in tubing.

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64. The apparatus of any of claims 57 to 63, wherein the tail is of relatively lightweight material to facilitate handling of the drift member and to avoid or minimise damage as the drift member travels through the tubing.

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65. The apparatus of any of claims 57 to 64, wherein the drift member is adapted to permit passage of fluid when the member is located in tubing.

5 66. The apparatus of any of claims 56 to 65, wherein the drift member comprises a drift body and a replaceable drift profile.

10 67. The apparatus of any of claims 56 to 66, further comprising a fishing profile.

68. The apparatus of any of claims 29 to 67, wherein the drift member comprises an audible signalling device.

15 69. The apparatus of claim 68, wherein the drift member comprises a hydrostatic switch.